DEPARTMENT OF COMMERCE

RADIO SERVICE BULLETIN

ISSUED MONTHLY BY RADIO DIVISION

Washington, November 30, 1927—No. 128

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ABBREVIATIONS

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name = Name of station.
Loc. = Geographical location. O = west longitude. N = north latitude. S = south latitude.
Call = Call letters assigned.
System = Radio system used and sparks per second.
Range = Normal range in nautical miles.
W. l. = Wave lengths assigned: Normal wave lengths in italics.
Service = Nature of service maintained:
- FX = Point-to-point (fixed service).
- PG = General public.
- PR = Limited public.
- RC = Radio compass.
- AB = Aviation beacon.
- B = Beacon.
- P = Private.
- O = Government business exclusively.

Hours = Hours of operation:
- N = Continuous service.
- X = No regular hours.

F. T. Co. = Federal Telegraph Co.
I. R. T. Co. = Intercity Radio Telegraph Co.
I. W. T. C. = Independent Wireless Telegraph Co.
K. & C. = Kilbourne & Clark Manufacturing Co.
M. R. T. Co. = Mackay Radio and Telegraph Co.
R. C. A. = Radio Corporation of America.
T. R. T. Co. = Tropical Radio Telegraph Co.
U. R. Corp. = Universal Radio Corp.
W. S. A. Co. = Wireless Specialty Apparatus Co.
C. w. = Continuous wave.
I. c. w. = Interrupted continuous wave.
Kc. = Kilocycles.
Fy. = Frequency.
A. c. = Alternating current.
V. t. = Vacuum tube.
U. S. L. = Applies only to the list of Commercial and Government Radio Stations of the United States.

NEW STATIONS

Commercial land stations, alphabetically, by names of stations

[Additions to the List of Radio Stations of the United States, edition of June 30, 1927, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Station	Call signal	Wavelengths	Service	Hours	Station controlled by—
Bolinas, Calif.[1]	KRMM-KMM	14.29, 28.58	FX	N	R. C. A.
Do.[1]	KEUN-KUN	16.93, 33.88	FX	N	Do.
New York, N. Y.[2]	WID	37.01	FX	X	International News Service.
Seattle, Wash.[3]	KPA	50.56	FX	X	Lincoln L. Jackson.

[1] Range, 7,000; system, General Electric Co. v. t. telegraph.
[2] Loc. (approximately) 74° 00′ 00″ W., 40° 35′ 00″ N.; system, composite v. t. telegraph.
[3] Range, 200; system, composite v. t. telegraph.

Commercial ship stations, alphabetically, by names of vessels

[Additions to the List of Radio Stations of the United States, edition of June 30, 1927, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Name of vessel	Call signal	Rates	Service	Hours	Owner of vessel	Station controlled by—
Atlantic	WQBG	S	PG	X	Gerard B. Lambert	R. C. A.
Buffalo Bridge	KIZF	S	PG	X	Charles Nelson Co.	
California	WRS	S	PG	X	American Line S. S. Co.	
Columbine	WQBF					
Habana	WQBI					
Heron	KUDF	S	PG	X	Deep Sea Fisheries Co.	
Irene[1]	WQBE	S	PG	X	American Tow Boat Co.	Owner of vessel.
Michabo	KFYG				Floyd L. Carlisle	
Mid-West[2]	WPBU		P	X	Benjamin G. Brinkman	Do.
Seyelyn[3]	WQBD		P	X	Paul F. Johnson	Do.
Star of Lapland[4]	KXOA	S	PG	X	Alaska Packers Association	Do.
Sunoil	WQBH	S	PG	X	Sunoil Co.	

[1] Range, 200; system, composite v. t. telegraph; w. l., 600, 700, 800
[2] Range, 100; system, De Forest v. t. telegraph; w. l., 103.
[3] Range, 50; system, composite v. t. telegraph; w. l., 34.78, 60.56.
[4] Range, 200; system, Halcun, 210; w. l., 600, 700, 800.

Commercial land and ship stations, alphabetically, by call signals

[b, ship station; c, land station]

Call signal	Name of station		Call signal	Name of station	
WQBG	Atlantic	b	KUDF	Heron	b
WQBH	Sunoil	b	KXOA	Star of Lapland	b
KRMM	Bolinas, Calif.	c	WID	New York, N. Y.	c
KEUN	do	c	WPBU	Mid-West	b
KFYG	Michabo	b	WQBD	Seyelyn	b
KIZF	Buffalo Bridge	b	WQBE	Irene	b
KMM	Bolinas, Calif.	c	WQBF	Columbine	b
KPA	Seattle, Wash.	c	WQBI	Habana	b
KUN	Bolinas, Calif.	c	WRS	California	b

Broadcasting stations, alphabetically, by names of States and cities

[Additions to the list of Radio Stations of the United States, edition of June 30, 1927]

State and city	Call signal	Wave length	Frequency (kilocycles)	Power (watts)
West Virginia: Clarksburg	WQBJ	232.9	1,250	50
Portable: Airplane (unnamed)	KHAO	204	1,470	50

Broadcasting stations, alphabetically, by call signals

Call signal	Location of station (address)	Owner of station	Power (watts)	Wave length	Frequency (kilocycles)
KHAC	Airplane (unnamed) (5138 Fulton Street, San Francisco, Calif.)	Flying Broadcasters (Inc.)	50	204	1,470
WQBJ	Clarksburg, W. Va., Willow Beach Club.	John Raikes	65	232.9	1,250

Government land stations, alphabetically, by names of stations

[Additions to the List of Radio Stations of the United States, edition of June 30, 1927, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Station	Call signal	Wave length	Service	Hours	Station controlled by—
Coco Solo, Canal Zone	NBC		O		U. S. Navy.
Fort Rodman, Mass	WUAW	1414	FX	X	U. S. Army.
Pearl Harbor, Hawaii	NPY		O		U. S. Navy.

Government land and ship stations, alphabetically, by call signals

[b, ship station; c, land station]

Call signal	Name of station	Call signal	Name of station
NBC	Coco Solo, Canal Zone c	WUAW	Fort Rodman, Mass c
NPY	Pearl Harbor, Hawaii c		

Special land stations, alphabetically, by names of stations

[Additions to the List of Radio Stations of the United States, edition of June 30, 1927]

Station	Call signal	Wave length (meters)	Frequency (kilocycles)	Power (watts)	Station controlled by—
New York: New York	2XAP	18.3-18.7, 36.6-37.5	16,000-16,400, 8,200-8,000.	500	Bull Insular Line.
Ohio: Akron	8XAS	8.35-16.6, 42.8-52.6	36,040-18,000, 7,005-5,700.	5,000	Firestone Plantations Co.
Porto Rico: San Juan	4XK	18.3-18.7, 36.6-37.5	16,000-16,400, 8,200-8,000.	1,000	Bull Insular Line.
Portable: Airplane	8XA	73.10, 130.4, 576.6	4,100, 2,300, 520	100	Ford Motor Co.

Special land stations, grouped by districts

Call signal	District and station	Call signal	District and station
2XAP	Second district: New York, N. Y.	8XA	Eighth district: Airplane.
4XK	Fourth district: San Juan, P. R.	8XAS	Akron, Ohio

ALTERATIONS AND CORRECTIONS

COMMERCIAL LAND STATIONS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1927, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

Strike out all particulars of the following-named stations: BURNWOOD, LA.; CLEVELAND, OHIO (KDPM); SHARON, PA.

COMMERCIAL SHIP STATIONS, ALPHABETICALLY, BY NAMES OF VESSELS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1927, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

ADLER.—W. l., *600*, 706, 800.
ADMIRAL PEOPLES.—Owner of vessel, Portland-California S. S. Co.
A. E. R. SCHNEIDER.—System, Navy-Simon, 1000.
ALABAMA (WFB).—W. l., *715*, 800, 875; hours, N and X.
ALBERT E. WATTS.—Range, 200.
ALBERT HILL.—Range, 150; system, R. C. A. v. t. telegraph; w. l., *600*, 706, 750, 800, 900.
ALOMA.—Range, 150; system, R. C. A., 1000; w. l., *600*, 706, 800; service, PG; hours, X; station controlled by owner of vessel.
AXTEL J. BYLES.—Range, 200; system, R. C. A v. t. telegraph; w. l., *600*, 706, 750, 800, 900, 1800, 1900, 2000, 2100, 2400.
BALLCAMP.—System, Navy-K. & C., 1000; w. l., *600*, 706, *715*, 800, 875; rates, Great Lakes service, 4 cents per word; other services, 8 cents per word.
BALLENAS.—System, R. C. A. v. t. telegraph; w. l., *600*, 706, *715*, 875; rates, Great Lakes service, 4 cents per word; other services, 8 cents per word.
BARBARA.—System, Navy, 1000.
BARHALLTON.—Range, 200; system, composite v. t. telegraph; w. l., *715*, 875; service, P; station controlled by owner of vessel.
BARRYTON.—W. l., *600*, 706, *715*, 875; rates, Great Lakes service, 4 cents per word; other services, 8 cents per word.
BATHALUM.—Range, 150; w. l., add *715*, 875; rates, Great Lakes service, 4 cents per word; other services, 8 cents per word.
BENSON FORD.—Range, 150–300; system, R. C. A. v. t. telegraph and spark, 1000; w. l., *715*, 800, 875.
BETHLEHEM.—Station controlled by I. R. T. Co.
BIRD CITY.—Owner of vessel, American Scantic Line.
BOWDOIN.—Range, 150; system, composite v. t. telegraph and telephone; w. l., 23.18, 34.78, 69.50, 109, *600*.
BRANT.—Owner of vessel, Portland Trawling Co.
BREMERTON.—Station controlled by R. C. A.
BUTTERCUP.—W. l., *600*, 706, *715*, 800, 875; rates, Great Lakes service, 4 cents per word; other services, 8 cents per word.
C. A. CANFIELD.—Range, 150; w. l., add 900.
CALAMARES.—Range, 200.
CAMAGUEY.—System, Marconi, 1000.
CAPAC.—W. l., *600*, 706, 800, 1800, 2100, 2400; hours, N.
CAPULIN.—W. l., *600*, 706, 800.
CAROLINA.—Hours, N and X.
CARRILLO.—Range, 200; w. l., add 2400.
CASPER.—Owner of vessel, American-Scantic Line.
CENTRAL WEST.—W. l., *715*, 800, 875.
CERRO AZUL.—Range, 200.
CERRO-EBANO.—Range, 200.
CHARLES E. HARWOOD.—Range, 150.
CHATHAM.—Range, 200.
CHILBAR.—Range, 300; system, Navy-Lowenstein, 1000; w. l., *600*, 706, 800; hours, N.
CHILOIL.—Range, 200; system, Navy-Simon, 1000; w. l., *600*, 706, 800.
CHRISTOPHER COLUMBUS.—Hours, N and X.
CITY OF BANGOR.—System, R. C. A. v. t. telegraph.
CITY OF BENTON HARBOR.—Hours, N and X.
CITY OF CLEVELAND III.—W. l., *715*, 875, 1800.
CITY OF DETROIT III.—W. l., *715*, 875, 1800; hours, N and X.
CITY OF GRAND RAPIDS.—W. l., *715*, 800, 875; hours, N and X.
CITY OF HOLLAND.—Hours, N and X.
CITY OF SAUGATUCK.—Hours, N and X.

City of St. Joseph.—Hours, N and X.
Cletus Schneider.—Range, 200; system, Wireless Improvement Co., 1000; w. l., *715*, 875.
Coelleda.—System, Navy, 1000.
Coldbrook.—System, Navy, 1000; w. l., *600*, 706, 800.
Collier County.—Name changed to Princess Montagu.
Colonel.—W. l., *715*, 875.
Condor.—Hours, N.
Conness Peak.—W. l., *600*, 706, 800.
Corsicana.—Station controlled by R. C. A.
Coya.—System, Navy, 1000.
Cuba.—Hours, N and X.
Daniel J. Morrell.—Range, 150.
Dannedaike.—W. l., *600*, 706, 800.
Dean Emery.—Range, 200.
De Bardeleben.—Range, 150; system, R. C. A. v. t. telegraph; w. l., *600*, 706, 750, 800, 900.
D. E. Callender.—System, Navy-Marconi, 1000; w. l., *715*, 800, 875.
Delecto.—Range, 200.
Dixiano.—Range, 200.
Dora.—Range, 300; system, Navy-W. S. A. Co., 1000; w. l., *600*, 706, 800.
Dorothy.—System, Navy, 1000.
Dulcino.—Range, 150; w. l., *600*, 706, 750, 800, 900.
Eastern Crown.—Range, 300.
Eastern Stater.—W. l., *715*, 800, 875, 1800; hours, N and X.
East Indian.—Range, 200.
Edgar Bowling.—Name changed to Texmar; owner of vessel, Calmar S. S. Corporation.
Edgehill.—Station controlled by R. C. A. (U. S. L.).
Edward J. Berwind.—Range, 200; w. l., *715*, 800, 875.
E. G. Mathiott.—Rates, Great Lakes service, 4 cents per word.
Elisha Walker.—Range, 200.
Elmsfort.—Station controlled by I. W. T. Co. (U. S. L.).
Elton Hoyt II.—System, R. C. A. v. t. telegraph; w. l., *715*, 875.
Esparta.—Range, 150; w. l., *600*, 706, 750, 800, 900; hours, X.
Estrada Palma.—Hours, N.
Ethan Allen.—Range, 200-300; system, Navy-K. & C., 1000 and F. T. Co. arc; w. l., *600*, 706, 750, 800, 1800, 1900, 2100, 2400.
Eugene V. R. Thayer.—Range, 200.
Evangeline.—Range, 200; system, R. C. A. v. t. telegraph and telephone; w. l., *600*, 706, 750, 800, 900, 1250, 1800, 1900, 2000, 2100, 2400.
Everett.—Range, 200; system, R. C. A. v. t. telegraph; w. l., *600*, 706, 800, 900.
E. W. Sinclair.—Range, 200.
Fairfax.—Range, 200; w. l., *600*, 706, 800, 900, 2100, 2400.
Fayette Brown.—System, R. C. A. v. t. telegraph; w. l., *715*, 875.
F. H. Wickett.—Range, 200.
Foam.—Range, 200.
Frank Seither.—Rates, Great Lakes service, 4 cents per word.
Franklin K. Lane.—Range, 200.
Frederic Ewing.—Range, 200.
Frederick R. Kellogg.—Range, 200.
Freeport Sulphur No. 5.—Range, 200.
Freeport Sulphur No. 6.—Range, 200.
Garfield.—System, Navy-Marconi, 1000; w. l., *600*, 706, 800.
Gene Crawley.—Range, 200; w. l., *600*, 706, 750, 800, 900.
George G. Henry.—Range, 200.
George W. Barnes.—Range, 200.
Governor Cobb.—Hours, N. and X.
Haligonian.—W. l., 34.78, 69.56; owner of vessel, Houston Wall; station controlled by owner of vessel.
Harold Walker.—Range, 200.
Harry Farnum.—Range, 200.
Harry W. Croft.—System, R. C. A. v. t. telegraph; w. l., *715*, 875.
Henry Ford II.—Range, 150-300; system, R. C. A. v. t. telegraph and spark, 1000; w. l., *715*, 800, 875.
Henry M. Flagler.—W. l., *600*, 706, 750, 800.
Herbert G. Wylie.—Range, 150; system, R. C. A. v. t. telegraph; w. l., *600*, 706, 750, 800, 900.

HUMBRICK.—System, Navy-R. C. A., 1000; w. l., add *715*, 875; rates, Great Lakes service 4 cents per word; other services, 8 cents per word.
ILLINOIS (WCZ).—W. l., *715*, 800, 875.
INDIANA.—Hours, N and X.
IPSWICH.—Station controlled by I. W. T. Co.
ISHPEMING.—Station controlled by I. R. T. Co.
JACKSONVILLE.—Name changed to Silverbrook.
J. FLETCHER FARRELL.—Range, 200.
J. M. DANZIGER.—Range, 200.
JOHN A. DONALDSON.—Rates, Great Lakes service, 4 cents per word.
JOHN A. KLING.—W. l., *715*, 875.
JOHN ANDERSON.—System, Navy-Marconi, 1000; w. l., *715*, 800, 875.
JOSEPH M. CUDAHY.—Range, 200.
KEKOSKEE.—Range, 200; system, Navy-K. & C., 1000; w. l., *600*, 706, 800.
LAGONDA.—Range, 200; system, R. C. A. v. t. telegraph; w. l., *715*, 875.
LAKE BENBOW.—System, Navy-R. C. A., 1000; w. l., add *715*, 875; rates, Great Lakes service, 4 cents per word; other services, 8 cents per word.
LAKE GAITHER.—W. l., *600*; 706, 800; rates, 8 cents per word.
LAKE ORMOC.—System, Navy-R. C. A., 1000; w. l., add *715*, 800; rates, Great Lakes service 4 cents per word; other services, 8 cents per word.
LIMON.—Range, 150; w. l., *600*, 706, 750, 800, 900.
MANISTIQUE.—W. l., *715*, 875.
MANITOU.—Navy-R. C. A., 1000; w. l., *715*, 800, 875; hours, N. and X.
METAPAN.—Range, 200.
MIAMI.—Hours, N and X.
MICHAEL GALLAGHER.—Station controlled by I. R. T. Co.
NANTUCKET.—System, R. C. A., 1000.
NEWPORT.—Owner of vessel, S. S. Newport (Inc.).
NORTH AMERICAN.—System, R. C. A. v. t. telegraph and spark, 1000.
ONEIDA (KDJO).—Range, 300; system, R. C. A. v. t. telegraph; w. l., *600*, 706, *715*, 800, 875, 2100, 2400.
ONONDAGO.—Range, 200; w. l., *600*, 706, *715*, 750, 800, 875, 1800, 1900, 2100, 2400.
OPHIR.—Station controlled by I. W. T. Co.
PAPOOSE.—Range, 150; system, R. C. A. v. t. telegraph; w. l., *600*, 706, 800.
PARIA.—Name changed to CHASE.
PAT DOHENY.—Range, 200; system, R. C. A. v. t. telegraph; w. l., *600*, 706, 750, 800, 900, 1800, 1900, 2000, 2100, 2400; station controlled by R. C. A.
PENMAR.—System, Navy, 1000.
PENOBSCOT.—Navy, 1000.
PERE MARQUETTE 21.—Rates, Great Lakes service, 6 cents per word, relay charge, 10 cents per word.
PERE MARQUETTE 22.—Rates, Great Lakes service, 6 cents per word, relay charge, 10 cents per word.
POINT BREEZE.—Range, 150; system, R. C. A. v. t. telegraph; w. l., *600*, 706, 750, 800, 900.
PURITAN.—System, Navy-R. C. A., 1000; w. l., *715*, 800, 875; hours, N and X.
QUEEN.—Range, 200.
REDWOOD.—Range, 200; system, R. C. A. v. t. telegraph; w. l., *600*, 706, 750, 800, 900; hours, X.
RICHMOND.—Range, 100–200; system, composite v. t. telegraph and K. & C., 1000; w. l., 34. 78, *600*.
ROBERT J. PAISLEY.—System, Navy-Marconi, 1000.
ROMULUS.—Range, 200; system, Navy-Simon, 1000; w. l., 600, 706, 800.
SAMONA.—System, composite v. t. telegraph; w. l., 109, *600*, 800.
SAN JOSE.—Range, 150.
SAN MATEO.—Range, 200; w. l., add 2400.
SANTA MARTA.—Range, 200.
SANTA PAULA.—Name changed to SANTA MARIA.
SAUCON.—System, Navy-Simon, 1000.
SENATOR.—W. l., *715*, 800, 875.
SEWALLS POINT.—Range, 300; system, R. C. A., 1000; w. l., *600*, 706, 800.
SHADOW K.—Range, 150; system, composite v. t. telegraph; w. l., 34.78, *600*.
SIXAOLA.—Range, 200; w. l., add 2400.
SKYLARK III.—Range, 25; system, composite v. t. telegraph; w. l., 34.78, 109; service, P; hours, X; station controlled by owner of vessel.
S. T. CRAPO.—Range, 150; system, composite v. t. telegraph; w. l., *715*, 1585; service, P; station controlled by owner of vessel.

SULPHITE.—W. l., *715*, 800, 875.
SUNEWARXCO.—W. l., *600*, 706, 800.
TEAL.—Owner of vessel, Portland Trawling Co.
THALASSA.—W. l., *600*, 706, 800; station controlled by owner of vessel.
THEODORE ROOSEVELT.—Range, 150; w. l., *715*, 875; owner of vessel, Maritime Securities Co.
TIVIVES.—Range, 200.
TORRENT.—System, composite v. t. telegraph and telephone; w. l., 143.5.
UTOWANA.—Range, 150.
WABASH.—Call signal changed to WDL; range, 150; w. l., *715*, 800, 875; rates, Great Lakes service, 6 cents per word.
WAWALONA.—W. l., *600*, 706, 800.
WEST ALSEK.—Station controlled by I. W. T. Co. (U. S. L.).
WEST CARNIFAX.—Owner of vessel, Export S. S. Corporation.
WEST ERRAL.—Navy, 1,000; station controlled by R. C. A.
WESTERN STATES.—W. l., *715*, 800, 875, 1,800; hours, N and X.
WESTPORT.—Station controlled by I. W. T. Co. (U. S. L.).
WEST TOGUS.—Station controlled by I. W. T. Co.
W. G. POLLOCK.—Rates, Great Lakes service, 4 cents per word; station controlled by I. R. T. Co.
W. H. BECKER.—Station controlled by I. R. T. Co.
W. H. LIBBY.—Owner of vessel, Standard Shipping Co.
WILLIAM A. MCKENNEY.—System, Navy, 1,000.
WILLIAM CAMPION.—Name changed to OAKMAR.
WILLIAM G. MATHER.—Range, 200-300; system, Navy Lowenstein, 1,000 and composite v. t. telegraph; w. l., *715*, 875.
WILLIAM N. PAGE.—System, Navy, 1,000; w. l., *600*, 706, 800.
WILLIAM P. SNYDER, Jr.—Station controlled by R. C. A.
WILLANGLO.—Station controlled by I. W. T. Co. (U. S. L.).
WILLWELLO.—Station controlled by I. W. T. Co. (U. S. L.).
WISCONSIN.—Hours, N and X.
WM. A. LYDON.—W. l., *715*, 875.
WM. BOYCE THOMPSON.—Range, 200; owner of vessel, Pan-American Petroleum & Transport Co.
W. S. MILLER.—Range, 200; system, R. C. A. v. t. telegraph; w. l., *600*, 706, 750, 800, 900.
YARMOUTH.—Range, 50; system, R. C. A. v. t. telephone and telegraph; w. l., *600*, 706, 750, 800, 900, 1,800, 1,900, 2,000, 2,100, 2,400.
YOREDA.—Range, 25; w. l., 109.
YOSEMITE.—W. l., *715*, 875.
ZACAPA.—Range, 300.
Strike out all particulars of the following-named vessels: COOS BAY, MUNWOOD, TONAWANDA.

COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY, BY CALL SIGNALS

KDAZ, *read* Oakmar; KUFD, *read* Texmar; KOJG, *read* Silverbrook; KOKQ, *read* Chase; WDL, *read* Wabash; WGQ, *read* Princess Montague; WPBW, *read* Santa Maria; strike out all particulars following the call signals KDPM, KFDS, KFTV, KUH, WBW, WHD, WNBU.

COMMERCIAL AIRPLANE STATIONS, ALPHABETICALLY, BY NAMES OF VESSELS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1927, and to the International List of Radiotelegraph Stations, published by the Berne Bureau]

COLUMBIA.—Strike out all particulars (WBJ).
No. 1985.—Named SPIRIT OF CALIFORNIA (KHAB).

BROADCASTING STATIONS, BY CALL SIGNALS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1927]

KFAB (LINCOLN, NEBR.).—Power, 5000; w. l., 319, fy. kc., 940.
KFBU (LARAMIE, WYO.).—W. l., 483.6, fy. kc., 620.
KFDY (BROOKINGS, S. DAK.).—W. l., 545.1, fy. kc., 550.
KFJR (PORTLAND, OREG.).—Address, 95 Fifth Street.
KFKA (GREELEY, COLO.).—W. l., 249.9, fy. kc., 1,200.
KFOY (ST. PAUL, MINN.).—W. l., 222.1, fy. kc., 1,350.
KFQA (ST. LOUIS, MO.).—W. l., 234.2, fy. kc., 1,280.

KFUM (Colorado Springs, Colo.).—Power, 1000; w. l., 282.8, fy. kc., 1,060.
KFUO (Clayton, Mo.).—Power, 1000 night, 1500 day; w. l., 545.1, fy. kc., 550.
KFUT (Salt Lake City, Utah).—W. l., 249.9, fy. kc., 1,200.
KFVE (St. Louis, Mo.).—Call signal changed to KWK.
KFXD (Jerome, Idaho).—Power, 15 night, 50 day.
KFXF (Denver, Colo.).—Power, 250.
KGBS (Seattle, Wash.).—Call signal changed to KVL, effective January 1, 1928.
KGBY (Columbus, Nebr.).—W. l., 222.1, fy. kc., 1,350.
KGCI (San Antonio, Tex.).—Power, 100.
KGDR (San Antonio, Tex.).—W. l., 206.8, fy. kc., 1,450.
KGEQ (Minneapolis, Minn.).—W. l., 204, fy. kc., 1,470.
KGEW (Fort Morgan, Colo.).—Power, 100 night, 200 day.
KGRC (San Antonio, Tex.).—Power, 100.
KGRS (Amarillo, Tex.).—Power, 250 night, 500 day.
KHJ (Los Angeles, Calif.).—Owner of station, Doue Lee (Inc.).
KLZ (Denver, Colo.).—Power, 500 night, 1000 day; w. l., 296.9, fy. kc., 1010.
KOIL (Council Bluffs, Iowa).—Power, 5000; w. l., 319, fy. kc., 940.
KOW (Denver, Colo.—near).—W. l., 247.8, fy. kc., 1,210.
KTAP (San Antonio, Tex.).—Address, 822 West Mulberry Street.
KTBR (Portland, Oreg.).—Address, 153 Sixteenth Street.
WAAD (Cincinnati, Ohio).—W. l., 230.6, fy. kc., 1,300.
WAAM (Newark, N. J.).—Power, 250; w. l., 267.7, fy. kc., 1,120.
WABC (Richmond Hill, N. Y.).—Power, 2500 night, 5000 day; w. l., 309.1, fy. kc., 970.
WABQ (Philadelphia, Pa.).—Call signal changed to WFAN.
WABZ (New Orleans, La.).—W. l., 238, fy. kc., 1,260.
WADC (Akron, Ohio).—Power, 1000; w. l., 238, fy. kc., 1,260.
WAMD (Minneapolis, Minn.).—W. l., 222.1, fy. kc., 1,350.
WBAP (Fort Worth, Tex.).—Power, 5000.
WBAW (Nashville, Tenn.).—Power, 500; w. l., 239.9, fy. kc., 1,250.
WBBL (Richmond, Va.).—W. l., 234.2, fy. kc., 1,280.
WBBW (Norfolk, Va.).—Power, 100.
WBBY (Charleston, S. C.).—W. l., 249.9, fy. kc., 1200.
WBKN (Brooklyn, N. Y.).—W. l., 199.9, fy. kc., 1500.
WBMS (Union City, N. J.).—W. l., 199.9, fy. kc., 1500.
WBOQ (Richmond Hill, N. Y.).—W. l., 309.1, fy. kc., 970.
WBRC (Birmingham, Ala.).—W. l., 241.8, fy. kc., 1240.
WBT (Charlotte, N. C.).—Power, 750 night.
WCAE (Pittsburgh, Pa.).—W. l., 461.3, fy. kc., 650.
WCAL (Northfield, Minn.).—W. l., 285.5, fy. kc., 1050.
WCAO (Baltimore, Md.).—W. l., 243.8, fy. kc., 1230.
WCAZ (Carthage, Ill.).—W. l., 249.9, fy. kc., 1200.
WCBM (Baltimore, Md.).—W. l., 225.4, fy. kc., 1330.
WCLO (Camp Lake, Wis.).—Changed to Kenosha, Wis.
WCMA (Culver, Ind.).—Power, 500; w. l., 260.7, fy. kc., 1150.
WCSH (Portland, Me.).—Power, 500; w. l., 365.5, fy. kc., 820.
WDAY (Fargo, N. Dak.).—W. l., 545.1, fy. kc., 550.
WDGY (Minneapolis, Minn.).—W. l., 275.1, fy. kc., 1050.
WDOD (Chattanooga, Tenn.).—W. l., 243.8, fy. kc., 1230.
WDWF (Cranston, R. I.).—Power, 250; w. l., 260.7, fy. kc., 1150.
WDWM (Asbury Park, N. J.).—Call signal changed to WCAP.
WEAN (Providence, R. I.).—W. l., 275.1, fy. kc., 1090.
WEBC (Superior, Wis.).—Power, 250 night, 1000 day.
WEEI (Boston, Mass.).—W. l., 508.2, fy. kc., 590.
WFAA (Dallas, Tex.).—W. l., 545.1, fy. kc., 550.
WFBG (Altoona, Pa.).—W. l., 267.7, fy. kc., 1120.
WFBR (Baltimore, Md.).—Power, 100; address Hoffman and Bolton Streets.
WFJC (Akron, Ohio).—Owner of station, W. F. Jones Broadcasting (Inc.); power, 500.
WFIW (Hopkinsville, Ky.).—Power, 750 night; w. l., 260.7, fy. kc., 1150.
WFLA (Clearwater, Fla.).—W. l., 516.9, fy. kc., 580.
WGBC (Memphis, Tenn.).—W. l., 228.9, fy. kc., 1310.
WGCP (Newark, N. J.).—Power, 250; w. l., 267.7, fy. kc., 1120.
WGL (Secaucus, N. J.).—Power, 1000.
WGN (Chicago, Ill.).—W. l., 416.4, fy. kc., 720.
WHAM (Victor Township, N. Y.).—W. l., 280.2, fy. kc., 1070.
WHAS (Louisville, Ky.).—W. l., 322.4, fy. kc., 930.

WHAZ (Troy, N. Y.).—W. l., 303.9, fy. kc., 980.
WHB (Kansas City, Mo.).—W. l., 340.7, fy. kc., 880.
WHK (Cleveland, Ohio).—Address, Ontario and St. Clair Avenues.
WHT (Deerfield, Ill.).—W. l., 303.9, fy. kc., 980.
WIBI (Flushing, N. Y.).—Call signal changed to WGOP; w. l., 199.9, fy. kc., 1500.
WIBO (Chicago, Ill.).—Changed to Desplaines, Ill.; power, 5000; w. l., 303.9, fy. kc., 980.
WIBS (Elizabeth, N. J.).—Owner of station, New Jersey Broadcasting Corporation, 80 Broad Street; power, 250.
WIP (Philadelphia, Pa.).—W. l., 348.6, fy. kc., 860.
WJAR (Providence, R. I.).—W. l., 483.6, fy. kc., 620.
WJAX (Jacksonville, Fla.).—W. l., 340.7, fy. kc., 880.
WJBA (Joliet, Ill.).—W. l., 247.8, fy. kc., 1210.
WKAQ (San Juan, P. R.).—W. l., 322.4, fy. kc., 930.
WKAR (East Lansing, Mich.).—W. l., 277.6, fy. kc., 1080.
WKBI (Chicago, Ill.).—W. l., 215.7, fy. kc., 1390.
WKDR (Kenosha, Wis.).—W. l., 247.8, fy. kc., 1210.
WLBQ (Atwood, Ill.).—W. l., 218.8, fy. kc., 1370.
WLBT (Crown Point, Ind.).—W. l., 247.8, fy. kc., 1210.
WLEX (Lexington, Mass.).—Owner of station, The Lexington Air Station, power, 50.
WLIB (Elgin, Ill.).—W. l., 416.4, fy. kc., 720.
WLSI (Cranston, R. I.).—Power, 250; w. l., 260.7, fy. kc., 1150.
WMAL (Washington, D. C.).—Power, 500.
WMAY (St. Louis, Mo.).—W. l., 234.2, fy. kc., 1280.
WMBL (Lakeland, Fla.).—Power, 100.
WMSG (New York, N. Y.).—Call signal changed to WPUB.
WNAX (Yankton, S. Dak.).—Power, 1000; w. l., 277.6, fy. kc., 1080.
WNBH (New Bedford, Mass.).—W. l., 247.8, fy. kc., 1210.
WNBQ (Rochester, N. Y.).—W. l., 205.4, fy. kc., 1460.
WNBR (Memphis, Tenn.).—Power, 100.
WNBW (Carbondale, Pa.).—W. l., 199.9, fy. kc., 1500.
WNJ (Newark, N. J.).—Power, 250; w. l., 267.7, fy. kc., 1120.
WNRC (Greensboro, N. C.).—Power, 250.
WOAI (San Antonio, Tex.).—W. l., 499.7, fy. kc., 600.
WOAN (Lawrenceburg, Tenn.).—Owner of station, Church of the Nazarene and Vaughan School of Music; power, 500; w. l., 289.9, fy. kc., 1250.
WOO (Philadelphia, Pa.).—W. l., 348.6, fy. kc., 860.
WOQ (Kansas City, Mo.).—W. l., 340.7, fy. kc., 880.
WORD (Batavia, Ill.).—W. l., 252, fy. kc., 1100.
WOS (Jefferson City, Mo.).—W. l., 361.2, fy. kc., 830.
WPCH (Hoboken, N. J.).—W. l., 325.9, fy. kc., 920.
WPSW (Philadelphia, Pa.).—W. l., 206.8, fy. kc., 1450.
WPTF (Raleigh, N. C.).—W. l., 545.1, fy. kc., 550.
WQAM (Miami, Fla.).—W. l., 384.4, fy. kc., 780.
WREC (Whitehaven, Tenn.).—Power, 100; w. l., 249.9, fy. kc., 1200.
WRHF (Washington, D. C.).—Address, Hotel Annapolis.
WRNY (Coytesville, N. J.).—W. l., 325.9, fy. kc., 920.
WRRS (Racine, Wis.).—W. l., 247.8, fy. kc., 1210.
WRSC (Chelsea, Mass.).—Call signal changed to WLOE.
WSAR (Fall River, Mass.).—Power, 250; w. l., 212.6, fy. kc., 1410.
WSAZ (Huntington, W. Va.).—W. l., 249.9, fy. kc., 1200.
WSIX (Springfield, Tenn.).—W. l., 249.9, fy. kc., 1200.
WSM (Nashville, Tenn.).—W. l., 336.9, fy. kc., 890.
WSMB (New Orleans, La.).—Power, 750; w. l., 296.9, fy. kc., 1010.
WSRO (Hamilton, Ohio).—Changed to Middletown, Ohio; w. l., 236.1, fy. kc., 1270.
WSUN (Clearwater, Fla.).—W. l., 516.9, fy. kc., 580.
WTAG (Worcester, Mass.).—Power, 250.
WTAL (Toledo, Ohio).—Power, 250; w. l., 239.9, fy. kc., 1250.
WTAR Norfolk, Va.).—Add call signal WSUF, Suffolk; w. l., 236.1, fy. kc., 1270.
WTAX (Streator, Ill.).—W. l., 247.8, fy. kc., 1210.
WTFF (Mount Vernon Hills, Va.).—Power, 10,000; w. l., 202.6, fy. kc., 1480.
WWL (New Orleans, La.).—Power, 500; w. l., 245.8, fy. kc., 1220.
WWRL (Woodside, N. Y.).—W. l., 199.9, fy. kc., 1500.
WWVA (Wheeling, W. Va.).—W. l., 516.9, fy. kc., 580.

Strike out all particulars of the following-named stations, KFIQ (YAKIMA, WASH.); KFVN (FAIRMONT, MINN.); KFWH (EUREKA, CALIF.); KFXH (EL PASO, TEX.); KGDJ (CRESCO, IOWA); KOLO (DURANGO, COLO.); KOWW (WALLA WALLA, WASH.); WABR (TOLEDO, OHIO); WCOM (MANCHESTER, N. H.); WDBZ (KINGSTON, N. Y.); WEAI (ITHACA, N. Y.); WKBM (NENBURGH, N. Y.); WKBU (NEWCASTLE, PA.—portable); WLBP (ASHLAND, OHIO); WQAE (SPRINGFIELD, VT.); WRAV (YELLOW SPRINGS, OHIO).

GOVERNMENT LAND STATIONS, ALPHABETICALLY, BY NAMES OF STATIONS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1927, and to the International List of Radiotelegraph Stations, published by the Berne Bureau]

ATLANTIC CITY, N. J.—Strike out all particulars.

GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY, BY CALL SIGNALS

Strike out all particulars following the call signal NIQF.

SPECIAL LAND STATIONS, BY NAMES OF STATIONS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1927]

TRIVORD (airplane—8XAB).—Strike out all particulars.

MISCELLANEOUS

VESSELS EQUIPPED WITH A RADIO COMPASS

The following-named vessels should be added to the list of commercial vessels equipped with a radio compass, published in the list of Commercial and Government Radio Stations of the United States, edition June 30, 1927: *Herbert G. Wylie*, owned by the Pan American Petroleum & Transport Co.; *Santa Ana*, owned by the Grace Line.

CHANGES IN RADIOBEACON STATIONS OF THE UNITED STATES

Dry Tortugas Light Station, Fla.—New beacon established. Will transmit every 180 seconds; groups of 3 dashes for 60 seconds, silent 120 seconds, thus:

— — — — — — etc. / 60 seconds Silent / 120 seconds

Operated on 1,000 meters, continuously during thick or foggy weather and daily in clear weather from 2 to 2.30 and 8 to 8.30 a. m. and p. m., seventh-fifth meridian time. Geographical location, 82° 55′ 13″ W., 24° 37′ 59″ N.

Ludington North Breakwater Light Station, Mich.—Geographical location, 86° 28′ 15″ W., 43° 57′ 15″ N.

Grand Haven Pierhead Range Front Light Station, Mich.—Geographical location, 86° 15′ 23″ W., 43° 03′ 27″ N.

Calumet Harbor Light Station, Ill.—Geographical location, 87° 30′ 32″ W., 41° 44′ 16″ N.

GENERAL CALL SIGNAL ASSIGNED

Call signal KGGM has been assigned as a general call signal for all vessels operated by the Mackay Radio & Telegraph Co.

CHANGE IN OPERATING PERIODS OF BORKUM RIFF LIGHT VESSEL, GERMANY, RADIOBEACON

The beacon of this vessel is operated daily in clear weather during the periods mentioned hereunder, in addition to the periods heretofore published:

H.	m.	s.		H.	m.	s.	H.	m.	s.		H.	m.	s.
2	14	30	to	2	34	00	14	14	30	to	14	34	00
5	14	30	to	5	34	00	17	14	30	to	17	34	00
8	14	30	to	8	34	00	20	14	30	to	20	34	00
11	14	30	to	11	34	00	23	14	30	to	23	34	00

CHANGE IN TRANSMISSION OF NAVIGATIONAL WARNINGS BY SCHEVENINGEN, HOLLAND, STATION

Navigational warnings are now transmitted by this station only on 600 meters (i. c. w.) at 2315, first at the rate of 15 minutes per minute and then quickly.

CHANGE IN TRANSMISSION OF WEATHER REPORTS BY PRATAS ISLAND, CHINA, COAST STATION

The weather reports and forecasts transmitted in plain English by this station, first on 600 meters at 0600 and 1100, and repeated on 1,450 meters at 0610 and 1110, are afterwards again repeated on 35.5 meters.

REGULATIONS GOVERNING THE LICENSING AND OPERATION OF AMATEUR STATIONS

The Federal Radio Commission has established the following regulations governing the licensing and operation of amateur radio stations:

Amateur radio stations are authorized for communication only with similarly licensed stations and on wave lengths or frequencies within the following bands:

Kilocycles:	Meters:
401,000 to 402,000.	0.7477 to 0.7496.
64,000 to 56,000.	4.69 to 5.35.
18,000 to 14,000.	16.7 to 21.4.
8,000 to 7,000.	37.5 to 42.8.
4,000 to 3,500.	75 to 85.7.
2,000 to 1,500.	150 to 200.

and at all times unless interference is caused with other radio services, in which event a silent period must be observed between the hours of 8 and 10:30 p. m., local time and on Sundays during local church services.

Amateur radio telephone operation will be permitted only in the following bands:

Kilocycles:	Meters:
64,000 to 56,000.	4.69 to 5.35.
14,300 to 14,000.	20.98 to 21.4.
2,000 to 1,550.	150 to 190.

Spark transmitters will not be authorized for amateur use.

Amateur stations must use circuits loosely coupled to the radiating system or devices that will produce equivalent effects to minimize key impacts, harmonics and plate supply modulations. Conductive coupling, even though loose, will not be permitted, but this restriction shall not apply against the employment of transmission line feeder systems to Hertzian antennas.

Amateur stations are not permitted to communicate with commercial or Government stations unless authorized by the licensing authority except in an emergency or for testing purposes. This restriction does not apply to communication with small pleasure craft such as yachts and motor boats holding limited commercial station licenses which may have difficulty in establishing communication with commercial or Government stations.

Amateur stations are not authorized to broadcast news, music, lectures, sermons or any other form of entertainment.

No person shall operate an amateur station except under and in accordance with an operator's license issued to him by the Secretary of Commerce.

LOST COMMERCIAL RADIO OPERATORS' LICENSES

Hereunder is a list of radio operators' licenses which have been reported to this bureau as having been lost. Should any of them be found, they should be returned to the bureau for cancellation. Inspectors and others concerned should see that lost licenses are not being used by unauthorized persons.

Name	Class	No.	Date issued	Port issued
Adamson, Alphonse A	First	16326	Sept. 2, 1926	New York.
Anacker, Paul	Second	418	July 14, 1927	Do.
Argondizza, Gaetano M	First	14648	Sept. 21, 1925	Do.
Bobulski, Frank	do	13814	June 14, 1926	Do.
Bourgeois, Henry	do	2033	May 19, 1927	New Orleans.
Buse, Clarence F	do	7300	Apr. 6, 1926	Baltimore.
Cleverly, Edwin W	do	1216	Sept. 13, 1927	New York.
Clyne, William Edwin	do	14593	July 17, 1926	Seattle.
Cubero, Abraham H	do	14877	Feb. 3, 1926	New York.
Curry, Joseph	do	16463	Nov. 23, 1926	Do.
Doyle, John E	do	7612	Feb. 19, 1926	Philadelphia.
Egerton, Willie Gray	Second	6019	Feb. 23, 1926	New Orleans.
Estes, Robert A	First	2032	May 5, 1927	Do.
Flynn, Leroy Randolph	do	14647	Sept. 19, 1925	New York.
Ford, William Albert	do	14379	Nov. 17, 1925	New Orleans.
Gordon, Henry	do	1108	July 29, 1927	New York.
Hickerson, Charles F	do	15580	May 6, 1926	Seattle.
Hutchinson, Robert	do	14099	Jan. 24, 1927	San Francisco.
King, Francis N	do	4589	July 15, 1927	Detroit.
Knox, O. Forrest	do	1027	July 8, 1927	New York.
Lange, Frederick A	do	15269	July 1, 1925	Boston.
Marmon, Roland W. S	do	12467	Mar. 19, 1925	New York.
Metivier, Robert E	do	13751	Nov. 14, 1925	San Francisco.
Mills, H. Lawrence	Second	4563	Nov. 30, 1926	Chicago.
Nickels, Everette	First	127	Jan. 13, 1927	Norfolk.
Peyton, Paul F	do	14979	Dec. 6, 1927	Seattle.
Pickett, Glen H	do	6241	Sept. 7, 1926	Detroit.
Poindorfer, James Hicker	do	2019	June 2, 1927	New Orleans.
Pugh, C. L	do	13310	Feb. 10, 1926	San Francisco.
Scambler, Percy A	do	1058	July 25, 1927	New York.
Singer, Charles	do	16097	Apr. 2, 1926	Do.
Steen, James R	do	13236	May 1, 1926	Boston.
Stolzenbach, Robert W	do	4108	Sept. 7, 1927	Detroit.
Truitt, Lowry S	do	2136	May 14, 1927	New Orleans.
Wiesmann, Grover William	do	13199	Sept. 2, 1925	New York.

WEATHER INFORMATION FURNISHED BY BRITISH STATIONS UPON REQUEST

[Notice to Mariners, London, Nov. 1, 1927]

Weather inquiries from ships may be addressed to any coast radiotelegraph station asking for (*a*) a weather report from any meteorological or signal station given in the following list; or (*b*) a weather forecast from the Meteorological Office, Air Ministry, covering a period of the next 12, 24, or 36 hours, as the case may be (but not exceeding 36 hours), for any area or any route. The inquiry from a ship for (*a*) should be made as in the following example:

> "Lands-End—Radio=Indicate weather Torr Head=*Baltic*" (5 words). Meaning: S. S. *Baltic* asks Lands-End to obtain weather report from Torr Head.

The inquiry for (*b*) will be made usually as in the following example:

> "Niton—Radio=indicate forecast 24 hours Channel=*Balmoral Castle*." Meaning: S. S. *Balmoral Castle* asks Niton to obtain from the Air Ministry a forecast for the next 24 hours of weather in the English Channel.

Inquiries may be varied, but in principle it is desirable to restrict the length of the message to a minimum number of words.

The charge for a weather report or a weather forecast is 7s. 6d.

A report of weather conditions can, if desired, be combined with a forecast in a single message from the Meteorological Office, Air Ministry; but the charges will be the same as if they are supplied separately.

The text of the reply to the ship will contain, in the following order: Name of the meteorological or signal station, time of origin of message, wind direction, wind force, barometer reading (corrected), barometric tendency, present weather, and vis.

In some cases barometric information will be omitted; in others the state of the sea and swell will be included. (See list below.)

Specimen reply to ship:

> "St. Ann's Head 1630 wind SW. 6 barometer 29.90 falling rapidly raining squally visibility half a mile sea rough."

The text of the reply from the Meteorological Office, Air Ministry will vary according to circumstances and will be signaled to the ship as received.

List of meteorological and signal stations

Station	Latitude N.		Longitude	
	°	′	°	′
†Aberdeen (Bridge of Don)	57	08	2	03 W.
†Bangor (Co. Down)	54	40	5	40 W.
Barry I	51	23	3	16 W.
Beachy Head	50	44	0	15 E.
†Broughness	58	44	2	57 W.
Cape Wrath	58	37	5	00 W.
‡Dover Pier	51	07	1	20 E.
Dunnet Head	58	40	3	22 W.
†Holyhead	53	19	4	35 W.
†Hoylake	53	24	3	11 W
Inchkeith	56	02	3	08 W.
†Kildonan	55	27	5	06 W.
Lizard	49	57	5	12 W.
†Mumbles	51	34	3	59 W.
Needles	50	40	1	35 W.
†Polhawn Cove	50	19	4	13 W.
†Port Patrick	54	51	5	07 W.
Prawle Pt	50	12	3	43 W.
‡St. Ann's Head	51	41	5	10 W.
St. Catherine Pt	50	35	1	17 W.
Southend	51	32	0	43 W.
Spurn Pt	53	35	0	07 E.
†Stornoway	58	12	6	22 W.
†Torr Head	55	12	6	04 W.
‡Tynemouth	55	01	1	25 W.
‡Wick	58	27	3	05 W.

Stations marked † are not at present supplied with barometers and will therefore be unable to give information about barometric pressure or tendency.

Stations marked ‡ will include information as to the state of the sea and swell.

each signal was heard, the greatest distance at which accurate determinations of distance could be made, and the results of any checks which it may have been possible to make on the accuracy of the information obtained, together with any remarks as to the usefulness of the signals and the desirability of continuing them permanently.

Approximate geographical location: 6° 40′ W, 52° 02′ N.

CONSTANT FREQUENCY BROADCAST STATIONS

The list of stations given below serves somewhat the same purpose as the list of "standard frequency stations." The transmitted waves from these stations should be of value to the public as frequency standards because of their constancy and close adherence to their licensed values. The Bureau of Standards makes occasional measurements of the frequencies of these stations. Each station employs a special device for controlling or checking the frequency, the calibration of the device being in agreement with the bureau's frequency standards. The most satisfactory special devices are automatic piezo control, piezo oscillator, or piezo resonator. Until recently a device known as a frequency indicator, Bureau of Standards type B, has been considered a satisfactory instrument for maintaining a broadcasting station on its assigned frequency. On account of the greater accuracy now required of stations, the use of such a device will not hereafter be sufficient to qualify a station for addition to the list. Stations not included in this list which use a piezo-electric device are invited to communicate with the Bureau of Standards requesting a copy of Letter Circular 214, Requirements of Constant Frequency Stations.

Station	Owner	Location	Frequency	Wave length	Apparatus for frequency regulation
			Kilocycles	*Meters*	
WOW	Sovereign Camp Woodmen of the World.	Omaha, Nebr.	590	508.2	Piezo oscillator.
WEAF	National Broadcasting Co.	New York, N. Y.	610	491.5	Special frequency standards.
WRC	Radio Corporation of America.	Washington, D. C.	640	468.5	Do.
WMAQ	Chicago Daily News.	Chicago, Ill.	670	447.5	Frequency indicator, type B, and piezo oscillator.
WJAD	Frank P. Jackson.	Waco, Tex.	670	447.5	Frequency indicator, type B.
WCCO	Washburn-Crosby Co.	St. Paul-Minneapolis, Minn.	740	405.2	Piezo oscillator.
WTAM WEAR	Willard Storage Battery Co.	Cleveland, Ohio	750	399.8	Do.
WBBM	Atlass Investment Co.	Chicago, Ill.	770	389.4	Do.
KGO	General Electric Co.	Oakland, Calif.	780	384.4	Do.
KTHS	Arlington Hotel.	Hot Springs, Ark.	780	384.4	Do.
WGY	General Electric Co.	Schenectady, N. Y.	790	379.5	Special frequency standard.
WCAD	St. Lawrence University.	Canton, N. Y.	820	365.6	Frequency indicator, type B.
WJJD	Loyal Order of Moose.	Mooseheart, Ill.	820	365.6	Piezo oscillator.
WLS	Sears, Roebuck & Co.	Crete, Ill.	870	344.6	Do.
WSM	National Life & Accident Insurance Co.	Nashville, Tenn.	880	340.7	Do.
WKAQ	Radio Corporation of Porto Rico.	San Juan, P. R.	880	340.7	Frequency indicator, type B.
WBZ	Westinghouse Electric & Manufacturing Co.	Springfield, Mass.	900	333.1	Special frequency standard.
KOA	General Electric Co.	Denver, Colo.	920	325.9	Piezo oscillator.
KDKA	Westinghouse Electric & Manufacturing Co.	East Pittsburgh, Pa.	950	315.6	Piezo oscillator and piezo control.
KFAB	Nebraska Buick Auto Co.	Lincoln, Nebr.	970	309.1	Piezo oscillator.
WBAL	Consolidated Gas, Electric Light & Power Co.	Glen Morris (Baltimore), Md.	1,050	285.5	Do.
WEAO	Ohio State University.	Columbus, Ohio.	1,060	282.8	Do.
WHAM	Stromberg-Carlson Telephone Manufacturing Co.	Rochester, N. Y.	1,080	277.6	Do.
WBAA	Purdue University.	West Lafayette, Ind.	1,100	272.6	Do.
KFIZ	Fond du Lac Commonwealth Reporter.	Fond du Lac, Wis.	1,120	267.7	Frequency indicator, type B.
WHK	Radio Air Service Corporation.	Cleveland, Ohio.	1,130	265.3	Piezo oscillator.
WMBI	Moody Bible Institute of Chicago.	Chicago, Ill.	1,140	263.0	Do.
WABQ	Keystone Broadcasting Co.	Philadelphia, Pa.	1,150	260.7	Do.
WEBJ	Third Avenue Railway Co.	New York, N. Y.	1,170	256.3	Do.
KWUC	Western Union College.	Le Mars, Iowa.	1,230	243.8	Do.
KFVS	Hirsch Battery & Radio Co.	Cape Girardeau, Mo.	1,340	223.7	Frequency indicator, type B.

each signal was heard, the greatest distance at which accurate determinations of distance could be made, and the results of any checks which it may have been possible to make on the accuracy of the information obtained, together with any remarks as to the usefulness of the signals and the desirability of continuing them permanently.

Approximate geographical location: 6° 40′ W, 52° 02′ N.

CONSTANT FREQUENCY BROADCAST STATIONS

The list of stations given below serves somewhat the same purpose as the list of "standard frequency stations." The transmitted waves from these stations should be of value to the public as frequency standards because of their constancy and close adherence to their licensed values. The Bureau of Standards makes occasional measurements of the frequencies of these stations. Each station employs a special device for controlling or checking the frequency, the calibration of the device being in agreement with the bureau's frequency standards. The most satisfactory special devices are automatic piezo control, piezo oscillator, or piezo resonator. Until recently a device known as a frequency indicator, Bureau of Standards type B, has been considered a satisfactory instrument for maintaining a broadcasting station on its assigned frequency. On account of the greater accuracy now required of stations, the use of such a device will not hereafter be sufficient to qualify a station for addition to the list. Stations not included in this list which use a piezo-electric device are invited to communicate with the Bureau of Standards requesting a copy of Letter Circular 214, Requirements of Constant Frequency Stations.

Station	Owner	Location	Frequency	Wave length	Apparatus for frequency regulation
			Kilocycles	*Meters*	
WOW	Sovereign Camp Woodmen of the World.	Omaha, Nebr.	590	508.2	Piezo oscillator.
WEAF	National Broadcasting Co.	New York, N. Y.	610	491.5	Special frequency standards.
WRC	Radio Corporation of America.	Washington, D. C.	640	468.5	Do.
WMAQ	Chicago Daily News.	Chicago, Ill.	670	447.5	Frequency indicator, type B, and piezo oscillator.
WJAD	Frank P. Jackson.	Waco, Tex.	670	447.5	Frequency indicator, type B.
WCCO	Washburn-Crosby Co.	St. Paul-Minneapolis, Minn.	740	405.2	Piezo oscillator.
WTAM WEAR	Willard Storage Battery Co.	Cleveland, Ohio	750	399.8	Do.
WBBM	Atlass Investment Co.	Chicago, Ill.	770	389.4	Do.
KGO	General Electric Co.	Oakland, Calif.	780	384.4	Do.
KTHS	Arlington Hotel.	Hot Springs, Ark.	780	384.4	Do.
WGY	General Electric Co.	Schenectady, N. Y.	790	379.5	Special frequency standard.
WCAD	St. Lawrence University.	Canton, N. Y.	820	365.6	Frequency indicator, type B.
WJJD	Loyal Order of Moose.	Mooseheart, Ill.	820	365.6	Piezo oscillator.
WLS	Sears, Roebuck & Co.	Crete, Ill.	870	344.6	Do.
WSM	National Life & Accident Insurance Co.	Nashville, Tenn.	880	340.7	Do.
WKAQ	Radio Corporation of Porto Rico.	San Juan, P. R.	880	340.7	Frequency indicator, type B.
WBZ	Westinghouse Electric & Manufacturing Co.	Springfield, Mass.	900	333.1	Special frequency standard.
KOA	General Electric Co.	Denver, Colo.	920	325.9	Piezo oscillator.
KDKA	Westinghouse Electric & Manufacturing Co.	East Pittsburgh, Pa.	950	315.6	Piezo oscillator and piezo control.
KFAB	Nebraska Buick Auto Co.	Lincoln, Nebr.	970	309.1	Piezo oscillator.
WBAL	Consolidated Gas, Electric Light & Power Co.	Glen Morris (Baltimore), Md.	1,050	285.5	Do.
WEAO	Ohio State University.	Columbus, Ohio.	1,060	282.8	Do.
WHAM	Stromberg-Carlson Telephone Manufacturing Co.	Rochester, N. Y.	1,080	277.6	Do.
WBAA	Purdue University.	West Lafayette, Ind.	1,100	272.6	Do.
KFIZ	Fond du Lac Commonwealth Reporter.	Fond du Lac, Wis.	1,120	267.7	Frequency indicator, type B.
WHK	Radio Air Service Corporation.	Cleveland, Ohio.	1,130	265.3	Piezo oscillator.
WMBI	Moody Bible Institute of Chicago.	Chicago, Ill.	1,140	263.0	Do.
WABQ	Keystone Broadcasting Co.	Philadelphia, Pa.	1,150	260.7	Do.
WEBJ	Third Avenue Railway Co.	New York, N. Y.	1,170	256.3	Do.
KWUC	Western Union College.	Le Mars, Iowa.	1,230	243.8	Do.
KFVS	Hirsch Battery & Radio Co.	Cape Girardeau, Mo.	1,340	223.7	Frequency indicator, type B.

STANDARD FREQUENCY STATIONS

As a result of measurements by the Bureau of Standards upon the transmitted waves of a limited number of low frequency radio transmitting stations, data are given in each month's RADIO SERVICE BULLETIN on such of those stations as have been found to maintain a sufficiently constant frequency to be useful as standards. There may be many other stations not measured in the bureau's laboratory which maintain their frequencies just as constant as the stations listed below. There is, of course, no actual guaranty that those stations will maintain the constancy shown, but the data indicate the high degree of confidence that can be placed in them. Broadcasting stations suitable for use as frequency standards are listed in the "Constant frequency broadcast stations."

The transmitted frequencies from the standard frequency stations can be utilized for calibrating frequency meters and other apparatus by the procedure given in Bureau of Standards Letter Circular No. 171, which may be obtained by a person having actual use for it upon application to the Bureau of Standards, Department of Commerce, Washington, D. C.

Station	Owner	Location	Assigned frequency	Period covered by measurements	Number of times measured	Deviations from assigned frequencies noted in measurements	
						Average	Greatest since Oct. 25, 1927
			Kilocycles	*Months*		*Per cent*	*Per cent*
NSS	United States Navy	Annapolis, Md.	17.60	18	74	0.14	0.11
WCI[1]	Radio Corporation of America.	Tuckerton, N. J.	17.95	32	123	.14	.22
WSS	do	Rocky Point, N. Y.	18.60	14	48	.14	.25
WII	do	New Brunswick, N. J.	21.80	29	152	.09	.69
NAA	United States Navy	Arlington, Va.	112.00	25	112	.18	.30

[1] Not measured since Oct. 31, 1927.

REFERENCES TO CURRENT RADIO LITERATURE

This is a monthly list of references prepared by the radio laboratory of the Bureau of Standards and is intended to cover the more important papers of interest to professional radio engineers which have recently appeared in periodicals, books, etc. The number at the left of each reference classifies the reference by subject, in accordance with the scheme presented in A Decimal Classification of Radio Subjects—An Extension of the Dewey System, Bureau of Standards Circular No. 138, a copy of which may be obtained for 10 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C. The various articles listed below are not obtainable from the Bureau of Standards. The various periodicals can be consulted at large public libraries.

R100.—*Radio principles*

R113.1 Thatcher, E. W. Fishing for radio waves (some radio fading experiments on long and short waves). Radio (San Francisco), 9, pp. 18-20; November, 1927.

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R134.75 Ullrich, E. H. Some notes on the effect of coupling between loop and beating oscillator circuits in superheterodyne receiver. Experimental Wireless (London), 4, pp. 652-57; November, 1927.

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R200.—*Radio measurements and standardization*

R214 Hitchcock, R. C. Mounting quartz oscillators crystal. Proceedings Institute Radio Engineers, 15, pp. 902-912; November, 1927.

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R300.—*Radio apparatus and equipment*

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R342.6 Westman, H. P. Effective short wave radio frequency amplification. QST, 11, pp. 26-30; December, 1927.

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R342.6 von Ardenne, M. and Stoff, W. On the values and the effects of stray capacities in resistance coupled amplifiers. Proceedings Institute Radio Engineers, 15, pp. 895-901; November, 1927.

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R343.7 Millen, J. A quality 5-tube a. c. receiver. Radio Broadcast, 12, pp. 133-137; December, 1927.

R344 Gabriel, F. Ein Röhrengenerator zur Erzeugung von Modulierter Hochfrequenz für Laboratoriumszwecke. Elektrische Nachrichten-Technik, 4, pp. 425-34; 1927.

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R344.3 Alexanderson, E. F. W. High frequency signaling system. U. S. Patent No. 1648711, issued November 8, 1927.

R381 Bennett, R. Some details of condenser design. Radio section of New York Sun, November 26, 1927.

R400.—*Radio communication systems*

R412 Schotanus. Method and arrangement for high frequency telephony. U. S. Patent No. 1646402, issued November 8, 1927.

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R600.—*Nonradio subjects*

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